

We Claim:

1. An intravenous catheter comprising an in-line housing, and a material within the housing that removes a targeted compound from the blood by selective adsorption.

2. An indwelling catheter comprising an in-line housing, and a material within the housing that removes a targeted compound from the blood by selective adsorption.

3. An intravenous catheter comprising an in-line exchangeable housing, and a material within the housing that removes a targeted compound from the blood by selective adsorption.

4. An indwelling catheter comprising an in-line exchangeable housing, and a material within the housing that removes a target compound from the blood by selective adsorption.

5. An intravenous catheter comprising a catheter tube having a wall, and a material impregnated in the wall, the material serving to remove a targeted compound from the blood by selective adsorption.

6. An indwelling catheter comprising a catheter tube having a wall, and a material impregnated in the wall, the material serving to remove a targeted compound from the blood by selective adsorption.

7. A catheter according to claim 1 or 2 or 3 or 4 or 5 or 6

wherein the material comprises polymeric particles.

8. A catheter according to claim 7

wherein the polymeric particles include a coating to impart biocompatibility.

9. A catheter according to claim 7

wherein the polymeric particles comprise particles prepared by polymerization or copolymerization of

5 a monomer selected from a group consisting of styrene, ethylstyrene, α -methylstyrene, divinylbenzene, diisopropenyl benzene, trivinylbenzene, and alkyl methacrylate.

10. A catheter according to claim 7
wherein the polymeric particles comprise particles formed from crosslinked polystyrene-type resins having a surface modified to minimize activation of blood complement system.

11. A catheter according to claim 7
wherein the polymeric particles comprise particles formed from a porous hydrophobic divinylbenzene copolymer having a surface modified to include surface exposed functional groups selected from the group of polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine, N-vinylcaprolactame and N-acrylamide.

12. A catheter according to claim 7
wherein the polymeric material comprise particles formed by polymerization of aromatic divinyl compounds or their copolymerization with aromatic monovinyl compounds in the presence of porogens or mixtures of porogens with properties close to those of θ -solvents.

13. A catheter according to claim 1 or 2 or 3 or 4 or 5 or 6

wherein the material is characterized by a Biocompatibility Index of not greater than 14.

14. A catheter according to claim 13
wherein the Biocompatibility Index is not greater than 7.

15. A catheter according to claim 1 or 2 or 3 or 4 or 5 or 6

wherein the targeted compound includes cytokines or other species of pro-inflammatory or anti-inflammatory stimulators or mediators.

16. A catheter according to claim 1 or 2 or 3

or 4 or 5 or 6

wherein the targeted compound includes middle molecular weight proteins.

17. A blood treatment assembly comprising
a first unit comprising an element for processing
the blood drawn from an individual,

5 a second unit comprising a material that removes
a targeted compound from the blood by selective adsorption,
and

coupling means for integrally coupling the first
and second units together to form a blood treatment assembly
that is supplied to a user as a single, integrated unit.

18. An assembly according to claim 17

wherein the coupling means locates the first unit
in an upstream flow direction relative to the second unit.

19. An assembly according to claim 17

wherein the coupling means locates the second
unit in an upstream flow direction relative to the first
unit.

20. An assembly according to claim 17

5 wherein the element of the first unit is
configured to receive the blood drawn from the individual
and to conduct separation of the blood into plasma and at
least one cellular blood component.

21. An assembly according to claim 17

wherein the element of the first unit is
configured to receive the blood drawn from the individual
and to oxygenate the blood.

22. An assembly according to claim 17

5 wherein the element of the first unit is
configured to remove waste from the blood drawn from the
individual and convey waste-depleted blood to the second
unit.

23. An assembly according to claim 17

wherein the material of the second unit comprises

polymeric particles.

24. An assembly according to claim 23
wherein the polymeric particles include a coating
to impart biocompatibility.

25. An assembly according to claim 23
wherein the polymeric particles comprise
particles prepared by polymerization or copolymerization of
a monomer selected from a group consisting of styrene,
5 ethylstyrene, α -methylstyrene, divinylbenzene, di
isopropenyl benzene, trivinylbenzene, and alkyl
methacrylate.

26. An assembly according to claim 23
wherein the polymeric particles comprise
particles formed from crosslinked polystyrene-type resins
having a surface modified to minimize activation of blood
5 complement system.

27. An assembly according to claim 23
wherein the polymeric particles comprise
particles formed from a porous hydrophobic divinylbenzene
copolymer having a surface modified to include surface
5 exposed functional groups selected from the group of
polymers of 2-hydroxyethyl methacrylate, N-vinylpyrrolidine,
N-vinylcaprolactame and N-acrylamide.

28. An assembly according to claim 23
wherein the polymeric material comprise particles
formed by polymerization of aromatic divinyl compounds or
their copolymerization with aromatic monovinyl compounds in
5 the presence of porogens or mixtures of porogens with
properties close to those of θ -solvents.

29. An assembly according to claim 17
wherein the material of the second unit is
characterized by a Biocompatibility Index of not greater
than 14.

30. An assembly according to claim 29
wherein the Biocompatibility Index is not greater

than 7.

31. An assembly according to claim 17
wherein the targeted compound includes cytokines
or other species of pro-inflammatory or anti-inflammatory
stimulators or mediators .

32. An assembly according to claim 17
wherein the targeted compound includes a middle
molecular weight protein.

33. A blood treatment assembly comprising
a first unit comprising a first material that
removes a first targeted compound from the blood,
a second unit comprising a second material,
different than the first material, that removes a second
targeted compound, different than the first targeted
compound, from the blood, and

coupling means for coupling the first and second
units together in a series flow relationship.

34. An assembly according to claim 33
wherein the first material comprises an
adsorption medium that removes the first targeted compound
by selective adsorption.

35. An assembly according to claim 34
wherein the second material comprises an
adsorption medium that removes the second targeted compound
by selective adsorption.

36. An assembly according to claim 34
wherein the second material comprises an ionic
exchange medium that removes the second targeted compound.

37. An assembly according to claim 33
wherein the coupling means locates the first unit
in an upstream flow direction relative to the second unit.

38. An assembly according to claim 33
wherein the coupling means locates the second
unit in an upstream flow direction relative to the first
unit.

39. An assembly according to claim 33
wherein one of the first and second targeted
compounds includes cytokines or other species of pro-
inflammatory or anti-inflammatory stimulators or mediators.

40. An assembly according to claim 33
wherein one of the first and second targeted
compounds includes a middle molecular weight protein.

41. An assembly according to claim 33
wherein one of the first and second targeted
compounds includes an endotoxin.

42. An assembly according to claim 33
wherein the first targeted compound includes
cytokines or other species of pro-inflammatory or anti-
inflammatory stimulators or mediators , and

5 wherein the second targeted compound includes
another compound released into the blood as a result of
trauma or injury.

43. An assembly according to claim 42
wherein the other compound includes a protein.

44. An assembly according to claim 42
wherein the other compound includes a toxin.

45. An assembly according to claim 42
wherein the other compound includes a chemical
moiety.